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## **Afterword: The facts in humor research**

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**The FACS in humor research**

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Running head: FACS in humor research

Prepared as an afterward to *Will the real relationship between facial expression and affective experience please stand up: The case of exhilaration. Reprinted in P. Ekman & E.L. Rosenberg (Eds.), The facial window: Measuring the face to learn about emotion, interaction, psychopathology, and health.* Oxford: Oxford University Press.

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The beginning of psychology's renewed interest in humor fell into the period of rise of cognitive psychology. Not surprisingly, the analysis of information-processing involved in humor appreciation dominated the models put forward at that time (see Goldstein & McGhee, 1972). Of course, smiling and laughter as very obvious responses to humor could not be overlooked, and hence usually an arrow pointed from the box depicting the successful termination of information processing to "laughter." Nevertheless, the responses to humor were conceptualized at a cognitive-experiential level only, and smiling and laughter were often merely assessed as supplements to the rating of funniness; mainly they served as more "objective" indicators of perceived funniness of a stimulus. Similarly, the first three chapters of the handbook of humor research (McGhee & Goldstein, 1983) were devoted to issues of facial expression, physiology, and cognitive/experiential processes in humor without, however, explicitly combining these three levels and acknowledging the affective nature of the responses to humor.

The causes for reluctance to conceptualize the responses to humor from an emotion psychology perspective most likely can be traced back at least to the *First International Conference on Humour and Laughter* held in Cardiff, Wales, in 1976 (Chapman & Foot, 1977). There the state of the art in the research of the field was appraised, and the research agenda for the years to come was set. Several authors lamented about the low correlations typically to be found between funniness ratings and smiling and laughter.

Obviously, coefficients between .30 and .40 do not suggest a coherent response pattern. The data presented in the article reprinted here show that the application of highly sophisticated assessment tools, like the FACS, generally boosts the size of the coefficients; even the least favourable Design A yields a coefficient of .65 in the control group. Thus, the observed lack of coherence of the response pattern can largely be explained by methodological factors, such as inaccurate measurement or the failure to separate different types of smiles. We could replicate the impact of the correlational design on the rank-order of coefficients in further studies (the reported study actually was carried out in the late 80s) using both FACS and facial-EMG. Since the FACS allows less interindividual variations in intensity than the EMG (due to, for example, strength of contraction, size and conformation of facial muscles, as well as to artifactual method variance, as caused by imprecise electrode placement), it can be expected that the former is more robust as regards to whether the data are analyzed between or within subjects. Indeed, in a facial-EMG study of 40 subjects and 20 stimuli the between-subject designs ( $A = .26$ ,  $C = .36$ ), but not the within-subject designs ( $B = .70$ ,  $D = .56$ ) gave the impression that intensity of facial expression (mean amplitude for zygomatic major muscle region) and affective experience are not highly intercorrelated (Ruch & van Thriel, 1994).

Further justification to keep smiling and laughter apart from perceived funniness was provided by the fact that both occur in non-humorous situations as well; *i.e.*, they hardly could be seen

as genuine expressions of humor. This point of view was almost inevitable since at that time there was no basis yet for distinguishing types of smiling or laughter on a morphological level. While qualities like "humorous," "derisive," or "nervous" were attributed to laughter, after all, it was still "laughter" as an entity. In our lab we began to identify and separate the types of smiling occurring in response to traditional (*i.e.*, jokes and cartoons, funny videos) and non-traditional (*i.e.*, the weight-judging task as a vehicle transporting the incongruity) humor stimuli. While the enjoyment smile definitely is the response occurring when the humor was successful, smiles based on the caninus and buccinator (often asymmetric) occurred as well.

A third issue discussed at the conference related to the relationship between smiling and laughter and their assessment. One position was that the presumably different phylogenetic development of smiling and laughter should be taken as granted; and therefore smiling and laughter are best kept as separate dependent variables (quantified by frequency or duration only). The fact that one can either respond to a humor stimulus with smiling or with laughter (but obviously not with both) has at least three consequences. First, in the sample of responses, smiling and laughter are correlated negatively. Second, potential treatment effects dilute since they are spread over two dependent variables (their mutual exclusive scoring additionally increasing the variances). Third, this view is, of course, maximally different from a postulation of coherent emotional response pattern considering experiential, behavioral, and physiological

levels. The other line of thinking considered the whole spectrum of responses as being unidimensional, ranging from negative to positive. This can be best exemplified by the so-called "mirth-index" (Zigler, Levine, & Gould, 1966), which was scored for negative response (-1), no response (0), half-smile (1), full smile (2), chuckle (3), and laughter (4). This scoring does not allow for blends of emotions (*e.g.*, enjoyment of an embarrassing theme), and it is also unclear into what category masking or phony smiles would be placed by the coders. There is support, however, for the assumption that smiling and laughter indeed represent different levels of intensity of exhilaration (or amusement); laughing occurs at higher levels of exhilaration, and smiling is typical of lower levels. Also, different intensities of smiling reflect different degrees of exhilaration (Ruch, 1990). We currently try to replicate these findings and try to stretch them out to different levels of laughter. Also, we plan to study the type of relationship between smiling and laughing for different emotions as well; for example, there might be a quantitative relationship between the smile and laugh of contempt, both based on the contraction of zygomatic major and buccinator (the contraction of the latter facilitating the articulation position of the vowel typically ascribed to derisive laughter).

All in all, the reprinted study as well as related ones gave me corroboration to further pursue the study of humor from an emotion perspective. Also, it made it obvious to me that experimental humor research will profit from adopting the recent advances made in emotion research. This includes the assessment

technologies developed (be it facial-EMG or anatomically based coding systems) as well as the theoretical advances, such as the identification of different types of smiles and the markers which help to distinguish among them. On the other hand, humor research is an exciting field to study basic emotion phenomena.

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